

from the editors

Well, here is another (LISP BULLETIN). This is the third issue (which explains the #3 on the cover). Our humble world-famous bulletin gets better each issue : the cover design is again by Daniel GOOSSENS and the technical articles are of the highest standards of excellence. Reaction to #2 has been quite promising.

(LISP BULLETIN) is one of the few things which does not cost more than it did last year: it's still free, but don't expect *that* to last much longer.

Since LISP is the best language in the world, everyone will want to know about the forthcoming LISP Conference, an unprecedented marvel full of wonder and delight.

As usual, we welcome contributions. The following topics are particularly encouraged

- small technical papers
- useful functions
- comments
- puzzles
- announcements for further new LISP systems
- book and paper reviews
- original engravings by M. C. Escher

As space permits, we are also interested in publishing *programs*, as well as smaller useful functions. Remember that we are not retyping communications that we publish. So the program listings should be printed on standard 8 1/2 * 11 inch, white paper.

CALL FOR PAPERS 1980 LISP Conference

The 1980 LISP Conference hosted by Stanford University, will be held on the Stanford campus, August 24-27, 1980. A proceedings will be published.

PURPOSE. Many areas of contemporary computer science have their spiritual roots in developments related to LISP. These areas include machine architecture, systems design, programming methodology and technology, and a theory of computation. The call for papers reflects this breadth.

TOPICS. The following topics are typical, but not exclusive:

Languages and Theory. Applicative languages, Object-oriented languages, Proving correctness of LISP programs, Mathematics and formal semantics of LISP-like languages.

Programming Aspects. Programming tools and environments for LISP-like languages, Applications of these ideas to other languages.

Architecture. The design and implementation of LISP hardware, Adaptation of existing machines, Specially designed LISP machines.

Applications. Non-traditional applications of LISP. This area, of course, is not easily categorized.

PAPER SUBMITTAL. Authors are requested to send four copies of a full draft paper not exceeding 4500 words, and a one-page abstract, by March 14, 1980 to the Conference Head.

The abstract should provide sufficient detail to allow the committee to apply uniform criteria for acceptance. Appropriate references and comparison to extant work should be included. The papers will be "blind refereed". Traces of authorship should not appear within the body of the paper; this information should appear *only* in a cover letter to the Conference Head.

Authors will be notified of acceptance or rejection by May 16, 1980. For inclusion in the proceedings, final papers are due by June 27, 1980.

PROGRAM COMMITTEE. The committee consists of: John R. Allen, Bruce Anderson, Richard Fateman, Dan Friedman, Eiichi Goto, Patrick Greussay, Tony Hearn, Carl Hewitt, Alan Kay, Peter Landin, Joachim Laubsch, John McCarthy, Gianfranco Prini, Erik Sandewall, Carolyn Talcott, and David Wise.

IMPORTANT ADDRESSES.

Conference Head is:

John R. Allen
Stanford Artificial Intelligence Lab
Stanford University
Stanford California 94305
(415)497-4971

In Charge of Local Arrangements is:

Dr. Ruth E. Davis
Department of EECS
University of Santa Clara
Santa Clara, California 95053
(408)984-4358

MEETING FORMAT. Besides the formal sessions, we expect to have several demonstrations, including LISP machines.

Evening sessions may be established, and informal workshops will be encouraged.

PANEL DISCUSSION. Tuesday evening, August 26, 1980, there will be a panel discussion on the topic "What is LISP?". Even informal conversations will elicit several divergent if not contradictory views of LISP; a organized effort should prove even more illuminating.

(HOFSTADTER)

Write a LISP function to generate the following set of integers

(1 3 7 12 18 26 35 45 56 ...)

(HOFSTADTER)

This is the function g. What is she doing?

```
(DE g (n)
  (IF (ZEROP n) 0
      (- n (g (g (SUB1 n))))))
```

And what about the function q?

```
(DE q (n) (COND
  ((= n 1) 1)
  ((= n 2) 1)
  (T (+ (q (- n (q (SUB1 n))))
        (q (- n (q (- n 2))))))))
```

(BRATLEY, MILO)

This is the function FOO. What is she doing?

```
(DE foo NIL
  (PRINT (APPEND (QUOTE (DE foo))
                 (CDR (GET (QUOTE foo)
                            (QUOTE EXPR))))))
  (PRINT (QUOTE (foo))))
```

(foo)

(GOOSSENS)

This is the function BAR. What is she doing?

```
(DE bar (l x)
  (IF (NULL l) x
      (bar (REVERSE (CDR l)) (CAR l))))
```

SEND MORE PUZZLES)

(REPORTS, MANUALS, BOOKS

AGRE P. , Functions as Data Objects : the Implementation of Functions in LISP, Computer Science Department, University of Maryland, TR-726, January 1979

CHAILLOUX J. , LISP 8.2, Manuel de référence, Université de Paris-8-Vincennes, Décembre 1979

DYER M.G., FLOWERS M., MUCHNICK S. S., LISP/85 User's Manual, Computer Science Department, University of Texas, TR-77-4, November 1977

FLOWERS M., DYER M. G., MUCHNICK S. S., LISP/85 Implementation Report, Computer Science Department, University of Texas, TR-78-1, February 1978

GREUSSAY P., Le Système LISP 16, Manuel de référence, Université de Paris-8-Vincennes et Ecole Polytechnique, Février 1979

HOFSTADTER D. R., GODEL, ESCHER, BACH : an Eternal Golden Braid, The Harvester Press, 1979

STEELE G. L., RABBIT : A Compiler for Scheme (A Study of Compiler Optimization), M.I.T. Artificial Intelligence Laboratory, AI-TR-474, May 1978

STEELE G. L., SUSSMAN G. J., The Art of the Interpreter, M.I.T. Artificial Intelligence Laboratory, AI Memo 453, May 1978

STEELE G. L., SUSSMAN G. J., Design of a LISP-based Processor, M.I.T. Artificial Intelligence Laboratory, AI Memo 514, March 1979

WEINREB D., MOON D. , LISP Machine Manual, M.I.T. Artificial Intelligence Laboratory, January 1979

WRITE MORE LISP REPORTS, MANUALS, BOOKS)

THE VLISP KIT :
DESCRIPTION, IMPLEMENTATION and EVALUATION.

Jérôme CHAILLOUX

Département d'Informatique
Université de Paris 8 - Vincennes
Route de la Tourelle
75571 Paris Cedex 12

Décembre 1979

(in French)

ABSTRACT :

This study presents the realization of *three systems* VLISP (a dialect of LISP) developed at the University of Paris 8 - Vincennes, on the following machines :

- a 8 bit words micro-processor (Intel8080/Zilog80)
- a 16 bit words PDP-11
- a 36 bit words PDP-10

From these realizations is extracted an *implementation model*.

Our study proposes a solution to the problems of construction and evaluation of such a system. These problems are :

- 1) The exhaustive description of the implementation. We propose a description based on the *virtual, referential and prototype machine VCMC2*.
- 2) The adequate representations of the VLISP objects and functions. We have associated some *natural properties* and we have established a *functionnal typology*.
- 3) The efficiency of the interpreter (in words of core, execution time and *power*). Our interpreter does, for his own need, a optimal core allocation (in term of CONS module calls). The direct acces (which needs only one memory access) to the values of objects variable and function, and a type classification of functions allow a *direct invocation* of all typed functions.
- 4) The *power* of control structures. Our implementation's KIT generalizes the VLISP control structures SELF and ESCAPE, extends them with the new constructions EXIT, WHERE and LETF and unifies completely their description and implementation.

An incarnation of our model is given by the realization of a *complete* VLISP system in the referential machine VCMC2. The *full* code is given in appendix.